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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/077,029	05/18/1998	MUTSUMI KIMURA	JAO40499	5555

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EXAMINER	
LIN, JAMES	
ART UNIT	PAPER NUMBER
1762	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/077,029	KIMURA ET AL.	
	Examiner	Art Unit	
	Jimmy Lin	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *101-105,107-120 and 123* is/are pending in the application.

4a) Of the above claim(s) *116-120* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *101-105,107-115,123* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/6/06, 8/2/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on 4/6/2006 and 8/2/2006 were filed after the mailing date of the Final Rejection on 8/9/2005. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner. Please note that the references already considered have been crossed out.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 105 and 107-115 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 110 recites "the lyophilicity being enhanced with respect to a liquid solution" (lines 8-9 of claim) and "arranging a liquid solution on the first electrode" (line 10 of claim). It is indefinite if "a liquid" in both recitations refer to the same liquid.

The term "lyophilicity" used in the context of the claims is unclear. According to www.dictionary.com, lyophilic is defined as "noting a colloid the particles of which have a strong affinity for the liquid in which they are dispersed" or "characterized by strong attraction between the colloid medium and the dispersion medium of a colloidal system". The claims do not require colloidal particles nor do they require a dispersion medium. Therefore, it is indefinite as to what the Applicant has meant by "lyophilicity" because the use of the term is inconsistent with the actual definition and the Applicant has not provided a special definition for the term. For the purpose of applying art, "lyophilicity" will be interpreted to mean having strong affinity for a liquid.

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 105,107-115 and 123 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no support for "an organic semiconductor material" (claims 105, 110, and 113). The specification only teaches that the liquid solution contains *an organic fluorescent material* and a solvent (pgs. 50-51). The claimed limitation of "semiconductor" includes materials other than fluorescent materials.

There is no support for a first liquid repellency of a side-wall of the insulating layer to a liquid being substantially different from a second liquid repellency of an upper surface of the insulating layer (claim 123). The specification does not compare the repellency of the side-wall to that of the upper surface of the insulating layer. The specification only teaches that the insulating material can generally be treated with UV or plasma radiation to enhance liquid repellency and nothing about only treating the upper surface.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claim 123 is rejected under 35 U.S.C. 102(b) as being anticipated by JP 08-203439 (references made are to the English equivalent U.S. Patent 5,763,139, hereafter Matsunaga).

Matsunaga discloses a method of making a plasma display panel (PDP) (i.e., a type of EL device). An insulating layer surrounds the pixel portion of the substrate (Figs. 1 and 3).

Matsunaga does not explicitly teach that the top of the insulating layer has a liquid repellency substantially different from the liquid repellency of the side-wall. However, Matsunaga does teach that an insulating layer 11b can be formed on top of and materially different from insulating layers 11c and 11d. The side-wall is interpreted to be the vertical portions of 11c and 11d, and the top of the insulating layer is interpreted to be 11b (see Fig. 3). The upper layer 11b is selected from a material having larger particle diameters than the underlying layers 11c and 11d (col. 4, lines 18-27). Because the materials for the side-wall and for the upper layer are different, the side and upper surfaces must necessarily have different liquid repellency. Different materials have different chemical properties. In particular, different materials inherently have different degrees of polarity, which would directly affect the repellency of any liquid. Therefore, the difference in liquid repellency of the side-wall and the top surface is inherent in the teaching of Matsunaga.

8. Claim 113 rejected under 35 U.S.C. 102(e) as being anticipated by Roitman (U.S. Patent 5,972,419).

Roitman discloses a method of making an EL device (abstract). The EL device has a first electrode 104, second electrode 102, and an organic semiconductor film 108 therebetween (Fig. 1). The EL material is dispensed with a solvent (col. 3, lines 3-7) and the solvent is evaporated after deposition (col. 3, line 51). The surface on which the EL material droplets are deposited can be arranged in a plurality of hydrophilic or hydrophobic regions so that the droplets are confined by surface tension. Whether the lyophilicity of the first electrode 101 is enhanced or an additional layer having a hydrophobic or hydrophilic property is deposited onto the first electrode, the teachings of Roitman meet the limitations of the claim. In the case that an additional layer is added, such layer is still enhancing the lyophilicity at the predetermined position because the affinity for the EL material droplets at the predetermined position is enhanced after the layer is added.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claim 114 is rejected under 35 U.S.C. 103(a) as being obvious over Roitman '419 in view of Okibayashi et al. (U.S. Patent 5,589,732).

Roitman is discussed above, but does not explicitly teach that the lyophilicity is enhanced by ultraviolet ray irradiation.

Okibayashi teaches a method of making an EL device, wherein a resin layer is exposed to ultraviolet radiation to change the affinity of the layer. The affinity of the layer is changed from hydrophilic to lipophilic (i.e., hydrophobic) (col. 4, lines 8-14). Roitman exemplifies xylene as a suitable solvent (col. 3, lines 1-10). Xylene is a hydrophobic liquid and would have a strong affinity for a resin layer that has been made hydrophobic. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a resin layer and to have exposed the layer to ultraviolet radiation in order to confine the EL material droplets of Roitman with a reasonable expectation of success because

Okibayashi teaches that such a resin layer is operable for use in EL devices and that such exposure can make the layer hydrophobic.

12. Claim 115 is rejected under 35 U.S.C. 103(a) as being obvious over Roitman '419 in view of Tada (U.S. Patent 5,616,427) and Cozzette et al. (us pat 5,554,339).

Roitman is discussed above, but does not explicitly teach that the lyophilicity is enhanced by plasma irradiation.

Tada teaches a method of making an EL device (abstract), wherein a polyimide interfacial layer 13 can be formed between the first electrode 12 and the EL layer 14,15 (col. 5, lines 6-11). Cozzette teaches that polyimide can be made hydrophobic via a fluorocarbon plasma treatment (col. 35, line 66-col. 36, line 4). Roitman exemplifies xylene as a suitable solvent (col. 3, lines 1-10). Xylene is a hydrophobic liquid and would have a strong affinity for a polyimide layer that has been made hydrophobic. In light of these teachings, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed a polyimide layer and to have exposed the polyimide to a fluorocarbon plasma treatment with the expectation of forming a hydrophobic region at the predetermined area of Roitman in order to confine the EL material droplets by surface tension.

13. Claims 101-104 are rejected under 35 U.S.C. 103(a) as being obvious over Roitman '419 in view of Hasegawa et al. (JP 09-230129).

Roitman discloses a method of making an EL device (abstract). Pixel electrode 132 is formed on a substrate and a solid insulating layer 131 is formed on the electrode. EL material is deposited in the wells formed between the insulating layers (col. 3, lines 29-50). The insulating layer can be left in place (col. 4, lines 1-2). The purpose of the insulating layer is to confine the droplets of EL material, preventing them from mixing.

Roitman does not explicitly teach enhancing a liquid repellency at a surface of the insulating layer. However, Hasewaga teaches a method of making a display device wherein insulating layer 2 is used to separate the colored layers 6 (Fig. 1). The insulating layer can be irradiated with UV rays in order to enhance the repellency of the ink and prevent the colors from mixing(abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the

time of invention to have used the insulating material of Hasewaga in the method of making the EL device of Roitman and to have enhanced the repellency of the insulating layer via UV irradiation with a reasonable expectation of success. One would have been motivated to do so in order to have further confine the EL material droplets of Roitman.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JL

JL

KEITH HENDRICKS
PRIMARY EXAMINER